THURSDAY, MARCH 27, 1919.

TRANSLATED SENSE AND SENSES.

Human Physiology. Vol. iv. "The Sense-organs." By Prof. L. Luciani. Translated by F. A. Welby. Pp. x + 519. (London: Macmillan and Co., Ltd., 1917.) Price 21*s*. net.

A MAN'S name linked to a star seems certain of long-continued remembrance, joined to a rose not quite so certain. Somewhere between these extremes of permanent fame and evanescent esteem is the fate of a name associated as advisedly with a part of the central nervous system as is Luciani's with that of the cerebellum. No one can speak of Luciani's cerebellum, since that would be unforgivably personal, but it is quite impossible to talk of the cerebellum without referring at once to Luciani. It is important to remember this when dealing with Luciani's statements about the function of almost any part of the body, certainly of the nervous system. It is very important to have it in mind when considering the value of his opinions on various psycho-physical phenomena, as in the concluding chapter of this volume.

Now what has been said might be considered a sly rebuke of egotism, but that is not in the least true. There is nothing in the book but the very comprehensive range of truth examined painstakingly by its author, and no egotism whatever. The point is this, that you cannot make an intimate acquaintance with the cerebellum, an organ which has apparently no part whatever to play in displays of consciousness, without being impressed with the value of nervous factors not directly concerned in displays of consciousness, but yet obviously controlling in some degree the factors responsible for such displays. Progress towards a veneration for "subconscious" nervous factors is inevitable, and if it is not checked there is a yielding of rigid definitions sufficient to allow of some debate about "unconscious sensations and feelings." The temptation may soon become invincible to say that "these nervous processes . . . fulfil the same functions as conscious sensory processes; it follows that they come into the range of mental life, and even constitute by far the largest part of the integral content of the mind" (p. 440).

Now there is no formal connection between this passage and the cerebellum. It is merely Luciani's statement as to certain general processes associated with other parts of the nervous system, but there is wisdom, in the writer's opinion, in remembering, when reading it, that the cerebellum has apparently no direct link with consciousness, and that Luciani has probed the part it plays. He has shown that it acts as an intermediary in maintaining and modifying that distributed "tone" of the skeletal musculature which is the essence of posture and a necessary basis for the strength and precision of movement, even of *voluntary* movement. It is clear that the transition from "tone" to "voluntary movement" is through much the same scale as from "subconscious" to "conscious" feeling.

Perhaps it may be difficult to discover what all this has to do with the subject in hand, the fourth volume of Luciani's "Human Physiology," but not, I think, when the book is read, and it is well worth reading. The original work is well known as a comprehensive, scholarly, and interesting text-book. It has now, in large part, been translated into English, and edited in an able fashion for the use of English readers. In this anglicised form it is already widely appreciated, and it will be agreed that the "tone" of the original, which might, indeed, have been gravely depressed in the process, has been well maintained. The cerebellum of the book, nowhere represented in consciousness, but everywhere evident in the characteristics of attitude, is as it was. That is to say, as a whole; but there are here and there parts where—well, perhaps any critical reader of the dioptrics of the eyeball in this fourth volume will find reasons for expressing criticism. That part of the matter is exceptional in being not quite so good as the remainder.

This fourth volume on the sense-organs should prove widely useful not only to students of physiology and medicine, but also to students of psychology. As a clear and pregnant expression of knowledge of these sense-organs to be found in a volume unburdened by the inclusion of other parts of physiology, there is at present nothing so good, perhaps not even the corresponding fourth volume of Foster, which will remain for long, like Ecclesiastes, as a penetrating and abiding lesson in judgment—better than this, but which did not contain quite so much physiology.

It is true that, in the writer's opinion, the book is otherwise burdened by the concluding discussion on psycho-physical phenomena, but that is a matter which may be criticised better by students of psychology, by whom it may also be seen as the heel of Achilles, or perhaps surprisingly as a very head-piece. It is true also that there are various decisions which would not have been reached by other competent authors. It may or may not be the case that muscular sense has a content which is nothing more or less than common sensibility, and that the tectorial membrane is the primary resonator apparatus of the cochlea. There are many such conclusions, which might be discussed, and may need revision. It may be the case that there are complete neurones in the immediate vicinity of taste-buds; it is not the case that observers have found the radius of curvature of the anterior surface of the crystalline lens to be between 2·9 and 4·0 mm. (p. 287); but what of it? There may be misjudgment, there are some errors, but there are everywhere knowledge, tone, and interest.

The volume was well worth translating, and has been translated and edited very well. Here and there a statement issues as it would never come from a writer of English; here and there a slip in the translation of a technical term has

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escaped the editor; but generally the combined efforts of translator and editor have been most successful. As in the other volumes, the newly appended references will prove of considerable value.

J. S. MACDONALD.

SOUTH AFRICAN GRASSLANDS.

The Grasses and Grasslands of South Africa. By Prof. J. W. Bews. Pp. vi+161. (Pietermaritzburg: P. Davis and Sons, Ltd., 1918.) Price 7*s.* 6*d.* net.

THIS little volume is a contribution to the study of South African plant ecology, a subject on which Prof. Bews has already published several papers. In studying the plant succession in the grasslands of South Africa, it was found necessary to devise a simpler means of identifying the species than that afforded by the key to the genera given by Dr. Stapf in his elaborate account of the grasses in the "Flora Capensis." An artificial key was therefore drawn up, and has been included in the present volume. The test of such a key is its value to the working field botanist, and Prof. Bews states that it has met with the approval of his fellow-workers. Following the key are a number of ecological notes on the principal species in each genus, the genera being arranged in alphabetical order. These notes embody many of the author's observations, his object being to set forth the principal facts that have been ascertained regarding the part played by the more important species in the grassland plant succession, and also by means of selected examples to illustrate the general differences which are shown in morphological characters, and particularly in leaf-anatomy.

The study of a simple transverse section of the leaf of a grass may give more information as to its nutritive value than an elaborate chemical analysis of the herbage, for the latter will vary greatly according to the time of year, and even according to the state of the weather. Xerophytic grasses, in which the leaves have to protect themselves against excessive transpiration, grow less quickly, and are not so valuable for pasturage as the more mesophytic types. A notable exception to this rule is *Danthonia purpurea,* Haas grass, or hare grass. Although in general appearance this is a xerophytic plant, farmers are agreed that it is also a very nutritious species. It is low-growing, being rarely more than an inch or two in height, with deep roots and numerous densely leafy shoots, and is peculiarly adapted to growing over the surface of hard-baked clay soils. It has become completely dominant in the grass veld for miles around Molteno, in the Stormberg region, near the eastern edge of the Karroo.

The ecological notes are illustrated by somewhat diagrammatic cross-sections of the leaves of the more important species, which indicate especially the distribution of the hard, mechanical tissue. The author then gives a general sketch of the grasslands of South Africa and their development. Five main regions are considered —namely, the south-western or Cape region, the western region, the sand veld region, the Karroo and Karroid central region, and the eastern grass veld region. The boundaries of these regions are shown in a map which forms the frontispiece. Finally, a short section is devoted to some economic questions concerned with grass-burning, stock-grazing, the feeding value of natural grasses, the cultivation of grasses, and soil erosion. An appendix gives in tabular form a list of English, Dutch, Zulu, and Sesuto names. A striking feature is the large number of names in the Zulu indicating a remarkable discrimination of species.

COLLOQUIAL CHEMISTRY.

Everyman's Chemistry. The Chemist's Point of View and his Recent Work told for the Layman. By Ellwood Hendrick. Pp. x+319. (London: University of London Press, Ltd., 1918.) Price 8*s.* 6*d.* net.

MR. HENDRICK has written an extremely original book. To use his own words: "The whole thing is a sporting proposition between you, the reader, and me. If I can hold your attention until you have read it through, I shall have succeeded in my intention." It is only fair to say that, if the reader possesses ordinary intelligence, he will be able to pick up a good deal of interesting information from the book, even if he comes away from it with confused ideas as to how chemists attain their results.

The style is colloquial in the extreme, and no one need be deterred from beginning the book by any fear of high-and-dry treatment, whilst the professional chemist will derive a good deal of amusement from the manner in which facts are presented. A few of Mr. Hendrick's headings will make clear what is meant: "Polygamy in Chemistry"; "Nitrogen, its Satanic Tricks"; "The Old Horse of Chemistry"; "The Ironmaster's Torment and Why he Swears"; "The Chemical Old Mare"; "The Grand Old Tramp who Left his Mark"; "The Red-headed Halogens."

It would be a mistake to suppose, however, that Mr. Hendrick has not done a useful piece of work in writing the book. He has kept in view the fact that the man in the street is not particularly interested in theory, but prefers to learn something about practice; and it is safe to say that few popular books contain such a mass of examples of the application of chemistry to practical problems. No one who reads this work can fail to appreciate the manner in which chemistry has permeated the whole of modern society. The uses of sulphuric acid, described on pp. 86–88, should awaken the layman to the fact that, from the time he turns on the tap of his bath in the morning until he finishes his breakfast, he is continually coming in contact with materials the production of which is possible only owing to the employment of sulphuric acid. And when prose

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